UNIVERSITY OF GONDAR

COLLEGE OF MEDICINE AND HEALTH SCIENCE

INSTITUTE OF PUBLIC HEALTH

A SELF-REPORT WORK RELATED INJURY AND ASSOCIATED FACTORS AMONG TEMPORARY WORKERS OF FINCHAA SUGAR FACTORY, OROMIA REGION, WESTERN ETHIOPIA.

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_____ _____

Examiner

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Acronyms

BLS ----------Bureau of Labor and Statistics

ETB----------Ethiopian Birr

FSF----------Finchaa Sugar Factory

GDP----------Gross Domestic Product

GTP----------Growth and Transformation Plan

ILO----------International Labor Organization

MOLSA----------Ministry of Labor and Social Affairs

OHS----------Occupational Health and Safety

OSHA----------Occupational Safety and Health Administration

PPE----------Personal Protective Equipment

SNNPR----------Southern Nations, Nationalities and People's Region

UoG----------University of Gondar

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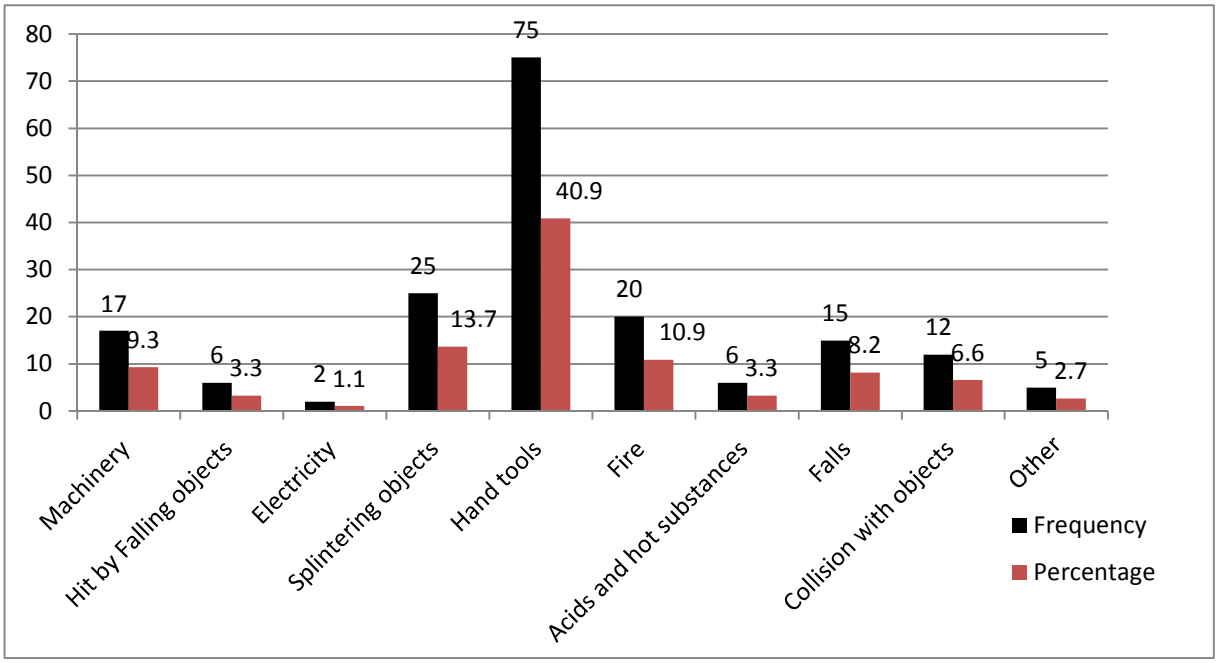

Abstract

Introduction: Occupational accidents are considered among the potential threats in public health because of their serious humanitarian, economic, social, and environmental consequences. Currently, the problem of occupational injuries in the workplace is increasing in many developing countries including Ethiopia.

Objective: The objective was to assess a self-report work related injury and associated factors among temporary workers of Finchaa Sugar Factory, Abay Choman District, Oromia Region, Western Ethiopia 2013.

Method: Institutional based cross-sectional study was conducted among 449 Finchaa Sugar Factory Temporary workers. Workers were interviewed based on probabilistic selection by stratifying their working sections followed by a simple random sampling technique. Pre-tested and structured face-to-face interview administered questionnaire used by trained data collectors. Data was coded and

entered into SPSS version 21 for analysis. Descriptive summary and logistic regression were applied for analysis at $p < 0.05$ significance level with 95% CI.

Result: Prevalence of self-reported work related injury among respondents is 183(40.8%). Being illiterate [AOR=5.32, CI: 1.82-15.55], primary school [AOR=2.28, CI: 1.11-4.69], secondary [AOR=7.05, CI: 3.43-14.47], service duration ≤5 years [AOR=2.13, CI: 1.16-3.92] working >48hours/week [OR=2.13, CI: 1.16-3.92], no induct training [AOR=10.67, CI: 4.07-28.48] were positively associated for injury occurrence. In addition, not utilizing protective device [AOR=8.78, CI: 4.34-17.77], sleeping disorder [AOR=11.88, CI: 4.95-28.48], garage worker [AOR=8.15, CI: 1.99-33.27], poor work relation [AOR=4.70, CI: 1.97-10.13], no job satisfaction [AOR=2.14, CI: 1.22-3.77] were also statistically associated with work related injury.

Conclusion: Prevalence of injury was relatively low. Low level of education, work experience, long working hours, no induct training, not utilizing protective device, sleeping disorder, poor working relationship and job satisfaction increased the risk of workplace injury. Implanting effective and sustainable preventive measures concerning health and safety at the workplace is important.

Key words: *work related injury, temporary workers, Finchaa Sugar Factory, Ethiopia*

1. Introduction

1.1. Statement of the problem

The daily adversity cost of human is vast and the economic burden of poor occupational safety and health practices. It was estimated that about 4 per cent of global Gross Domestic Product loss is related to this issue each year. According to International Labor Organization (ILO) estimation 6, 300 people die every day because of occupational accidents or work-related diseases – more than 2.3 million deaths per year 0.3 million related to work related injury. Recently, 317 million accidents occur on the job annually; many of these resulting in extended absences from work. The issues of safety and health conditions at work are very different between countries, economic sectors and social groups. Burden of deaths and injuries take a particularly heavy toll in developing countries, where a large part of the population is engaged in hazardous activities, such as agriculture. The most vulnerable group throughout the world are the poorest and least protected - often women, children and migrants - are among the most affected (1, 2).

A research finding in Brazil sugarcane has indicated that workers face different climatic conditions in sugarcane plantations, characterized by intense environmental factors during the entire year of spring and summer, and mild and dry winters during the sugarcane harvest period. This shows that workers involved in the manual and mechanized cutting are daily exposed to several factors that pose risks to their health, such as solar radiation, rains, winds, dust from the soil, soot from burning sugar cane, and venomous animals (3).

According ILO's reports more positive attitudes towards OHS and related areas such as workplace health promotion are being addressed and the world of work is progressively moving away from the belief that unsafe or unhealthy working conditions are an inevitable part of working life for some (1, 4, 5).

According to the Ethiopian GTP, by the year 2015, the agricultural sector will take the leading role, and expect the industrial sector to make a significant contribution (6, 7). The government has defined priority for diversification and Agricultural

Demand-Led Industrialization and export promotion plays a key role in its strategy. Manufacturing has stagnated at about 5% and agricultural products over the last 20 years and 43% in 2000 of Gross Domestic Product (GDP) respectively (8).

Eventhough no study conducted in sugar factories specifically, in Ethiopia, but some other studies conducted showed that the proportion of work related injury in Tendaho Agricultural Development by Osman in 2006 was 78.3%, in Amhara region medium and small scales industries in 2007 by Takele was 33.5% (9, 10). It was expected that the nature work related injury in Finchaa Sugar Factory might not be quite far from other industries in Ethiopia with respect to to work related injury.

The aim of the current issue is to improve the health of all workers and the public health sector has an important role to play in securing workers' health (11, 12). It is suggested that improved understanding of the circumstances associated with occupational injuries should contribute to more effective preventive strategies (12). Establishing the Occupational Health Safety (OHS) principles, shares every the goal of preventing injury in our nation's workplaces. This study attempted to contribute in the assessment of the prevalence and associated factors related to work related injury among temporary workers of Finchaa Sugar Factory employed in factory and agricultural operations in Horo Guduru Wollega, Oromia Regional State.

1.2. Literature review

1.2.1. Magnitude of work related injury

Estimation of the global burden of disease due to occupational factors, including injury, is a difficult task. Many advanced established market economies often have in place only fragmented reporting systems, and most less well developed countries usually have almost no reliable information to assist in making attempts at estimating (13).

The universality of human rights and decent work values help encourage a minimum threshold of responsible conduct, in the workplace and in the community, for companies and their stakeholders operating across borders in global markets. Recent ILO research has shown that more than an estimated 317 million workers were injured in accidents at work that resulted in absences from work of four days, or more, and equates to an average of 850,000 per day. It is also estimated that every day more than 960,000 workers get hurt because of accidents (1, 14).

Today, occupational accidents are considered among the potential threats because of their serious humanitarian, economic, social, and environmental consequences. It is estimated that around 4 per cent of the world's gross GDP is lost in terms of various direct and indirect costs, including compensation, medical expenses, property damage, lost earnings and re-placement training (15).

The improvement of reporting systems for occupational accidents is an increasingly important challenge in many African countries. Illness and injury on such a scale impoverish individuals and their families, and they undermine attempts to improve working conditions. In addition to immeasurable human suffering, they cause major economic losses for enterprises and societies as a whole, such as lost productivity and reduced work capacity (5).

Workers are heavily exposed to occupational hazards in agriculture, primarily extraction industries and heavy manufacturing (16). According to the African News Letter report of 2010 on Egypt, the highest numbers of occupational accidents (76.5%) and fatalities (32%) were reported in the manufacturing sector (17). A study

in Nigeria on Health and Safety in Agriculture and Food Security in Ibadan showed that 63% of the respondent were injured (18).

1.2.2. Characteristic of work related injury

Collection of data on injury is inadequate in most countries. In some of the countries where there is an adequate data collection system, most of the data is not fully comparable from one country to the next because of variations in definitions, recording and notification systems. Fatalities are the most reliable category, best suited for comparisons between countries. Injury statistics usually include insured workers only, but the majority of employees in developing countries such as Tanzania are not insured (5). Data obtained from the study identified injuries of the shoulder, wrist, elbow, neck, low back, and mid-back (19). A cross sectional study from Brazil in 2012 showed that a one-year prevalence of work days lost to health problems was 12.5%, of which 5.5% were directly working-related and 4.1% aggravated by work (20). A study conducted on small and medium scale industries showed that 17.1% of the injured respondents were hospitalized, accounting for 40% hospitalize more than 24 hours. Accordingly 103(53.9%) were absent from work for more than 4 days. As a result of 322 work-related injury about 191 working days were lost and two deaths were reported because of work related injury in the sampled industries in the last 12 (10).

1.2.3. Associated factors of work related injury

1.2.3.1. Socio-demographic factors

According to ILO and FAO report majority of low income groups in rural areas is employed mostly as casual and seasonal workers under poor health, safety and environmental conditions (21). The majority of injury resulting in claims was experienced by males 24–35 years of age with 1–6 months of work experience (22). About the 67% of women had only primary level of education and remaining were illiterate this made them vulnerable to psychosocial stress, in terms of exploitation, less bargaining power for wages (15). A study from Brazil sugar cane based ethanol production has a need for low-skilled, low-wage and skill workers demand for labor in specified industry (23). A survey report from Nicaraguan sugar industry's labor

conditions showed that 149(22.9%) illiterate, 413(63.5%) primary, 23(3.6%) and 13.5% higher education attended workers employed (24).

1.2.3.2. Behavioral factors

A workplace survey in the US indicated that males were more likely to use eye protection than females (34.7% vs. 25.2%). An interview survey conducted in US showed that the age group of 18-24 years was less likely to use eye protection (15.3%) (25). Another study in the United State provided that support for a negative relationship between workplace sleepiness and safety behavior and limited support for a positive relationship between workplace sleepiness and occupational injury (26).A study conducted in Canada showed that women in processing and manufacturing jobs (OR=2.46) were at high risk of working injury associated with trouble sleeping (27). A study conducted in India revealed that workers who complained problem of sleeping disturbance during work had about two times more likely to report occupational injury than workers who did not report the problem of sleeping disturbance (AOR: 1.99, 95% CI: 1.30.3.04) (28). A cross-sectional study conducted in small and medium scale industries statistically significant association with regard to the workers' behavior: having sleeping disorder (AOR=1.49, 95%CI: 1.04-2.14) positively and job satisfaction (AOR=0.59, 95%CI: 0.43-0.83) negatively associated with work related injuries (10). PPE procurement is a too common occurrence, when visiting the workplaces that PPEs had indeed been bought but workers were not using them. A study of the WHO on alcohol consumption and injury, indicated that alcohol is a leading risk factor for mortality and morbidity related to both intentional and unintentional injuries (29). According to an OHS profile for Ethiopia, most of the safety services in many undertakings are focused mostly on provision of PPE and other issues such as, organizing awareness creation training programs occasionally (30).

1.2.3.3. Work environmental factors

Poor work environment, machinery and tool characteristics, suffering from poor health were associated with injury occurrence amongst automobile repair workers (31). A study conducted in Pakistan Noon Sugar industry showed that 30.8% of

respondents given supervisors' were willing to listen their work problems and 6.4% to 21.2% respondents were disagreed (32). Study in Indian automobile repair, 63% of the workers reported injuries (31). Another report from Kenyan Sugar industry was also indicated that an OHS culture is seldom found in the sector and all individuals have to take responsibility for their own and their colleagues' working environment, it was also the inadequacy of PPE that prevented its use (33, 34). A study in ethiopia from indicated job satisfaction is moderately associated with work related injury (9).

1.2.3.4. Organizational factors

The ILO's regular budget supplementary has reported that industry in having high levels of workplace injury and alcoholism; training was more the exception than the rule; productivity and wages were low (4). On the other hand, the European Union (EU) data on temporary agency work, most temporary workers are younger and people employed on temporary contracts have less access to training and to participate in long-term competence development than workers with permanent contracts. They also reported that had less control over the order of tasks, pace of work and work methods, have lower job demands and are less informed about risks at work (35). It is legally prohibited to disobey the "normal hours of work shall not exceed eight hours (8) a day or forty-eight (48) hours a week" (36). A study in Ethiopia from Tendaho Agricultural Development in 2006 indicated that working for more than 48hours/week was positively associated with work related injury (9).

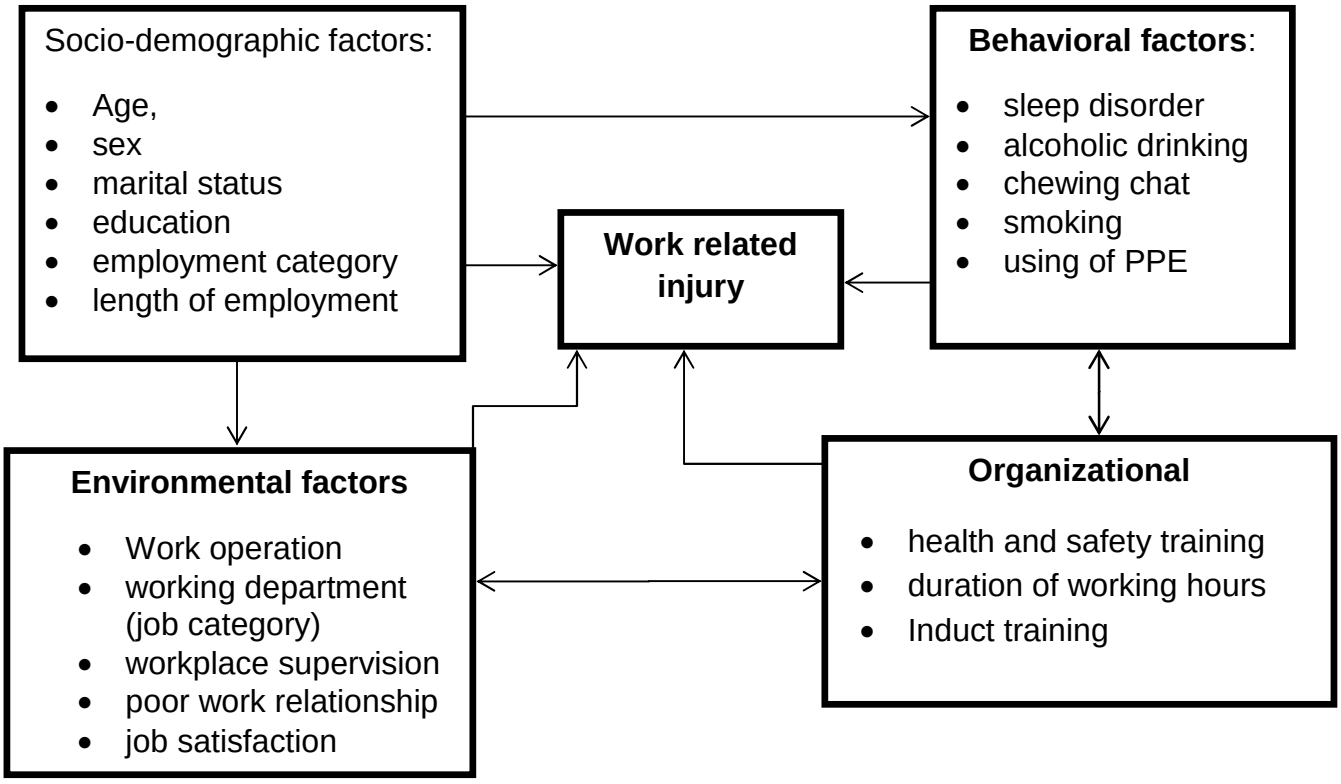

Figure 1: Conceptual framework

1.3. Justification of the study

It was reported that workers in food manufacturing industries are more likely to be fatally injured and experience non-fatal injuries and illnesses than those in private industry as a whole and workers are much more likely to suffer a non-fatal injury or illness requiring job transfer or restriction than one resulting in days away from work to recuperate.

Studies conducted in few countries have revealed that there were frequent injuries and accidents in sugar industries, but a little work had been done at work related injury prevention.

Ethiopia, with regard to the status of the service coverage, there are many workplaces that have never been provided OSH services. The coverage is very small, approximately it does not exceed above 10-15% of its service receivers.

Due to improper functioning of the service, non-compliance of OSH legislation was common by industries, working conditions were very poor and hazardous, where mainly temporary workers had suffered of occupational injuries which otherwise could have been prevented by instituting simple precautions. Even if data on work-related accidents and diseases is essential for prevention, workers and employers were not conscious about the importance of OSH at work place, and had never involved in realizing it through active participation and taking it as one sole duty of them.

This study was conducted by considering no previous related injury study has been conducted in the Finchaa Sugar Factory to assess the prevalence and associated factors among temporary workers to work-related injury. Therefore, the results of this study could be an appropriate basis for planning and implementing an interventional occupational health and safety program in the workplace and for the improvement of workers' health in the sugar-producing industry.

2. Objective of the study

2.1. General objective

To assess a self-reported work related injury and associated factors among temporary workers of Finchaa Sugar Factory, Abay Choman District, Oromia Regional State, Ethiopia 2013.

2.2. Specific objectives

- To determine prevalence of work related injury.
- To identify associated factors of work related injury.

3. Methods and materials

3.1. Study design and period

An institutional based cross-sectional study design was employed to assess a self-report work related injury and associated factors among Finchaa Sugar Factory temporary worker from March–May 2013.

3.2. Study area

The study was conducted at the Finchaa Sugar Factory (FSF). It is among one of the state owned institution, located in Abay Choman District, Horo Guduru Wollega Zone, Oromia Regional State, Western Ethiopia in the Abay river basin at about 351Km West of Addis Ababa (the capital city). It was completed in 1998, developed 6800 hectares and has a production capacity of 85,000 tons of sugar per annum. Currently, the factory has about 11, 740 workers, of which 72.7% (8535) are temporary workers. Recently, the factory expansion has increased in its sugar and ethanol production capacity as well its employment opportunity.

The FSF has four main operations, namely: factory, agricultural, human resource, and development and finance and supply. Productive staff workers frequently employed under factory and agricultural operations, counting more than half of total workers. The first two operations: Factory and Agricultural operations were selected based on the nature of their working conditions among out of other operations. Sample selection was allocated proportionally to these operations to select study population.

3.3. Study population

Source population: All temporary workers who have been employed in factory and agricultural operations, and actively performing their task at the Finchaa Sugar Factory.

Study population: All selected workers among temporary workers of Finchaa Sugar Factory.

Inclusion and exclusion criteria

Inclusion criteria: All temporary workers of Finchaa Sugar Factory employed in factory and agricultural work operations.

Exclusion criteria: Workers who were in the night shift, severely ill other than work related injury and unable to respond were excluded from the study, night shift workers.

3.4. Sample size determination

The sample size for the study was calculated using the assumption that the proportions (P) of work related injury to being 78.3**%** (research done on work related injury on Tendaho Agricultural Development, 2006) (9), level of significance to be 5% (α = 0.05), 95% confidence level,

$Z_{\alpha/2}$ = 1.96%, 4% marginal error (w) then,

$n = [Z^2_{\alpha/2}P(1-P)]/[w^2] = \frac{1.96 x 1.96 x 0.783 x 0.217}{0.04 x 0.04} = 407.96 \sim 408$

1**0%** non-response rate 408X10% = 40.8 ~ 41

And adding a 10% non-response rate, 41, a total of 449 temporary workers was required for the study.

3.5. Sampling procedures:

The sampling unit was taken from temporary workers of the FSF: factory and agricultural work operations randomly. The first two operations, Factory and Agricultural, were selected purposively based on the nature of their working conditions. Among the selected operations, sample selection was allocated proportionally by implementing stratifying to working operations, sections and departments followed by simple random sampling technique. Each respondent was drawn by the lottery method to participate in the interview.

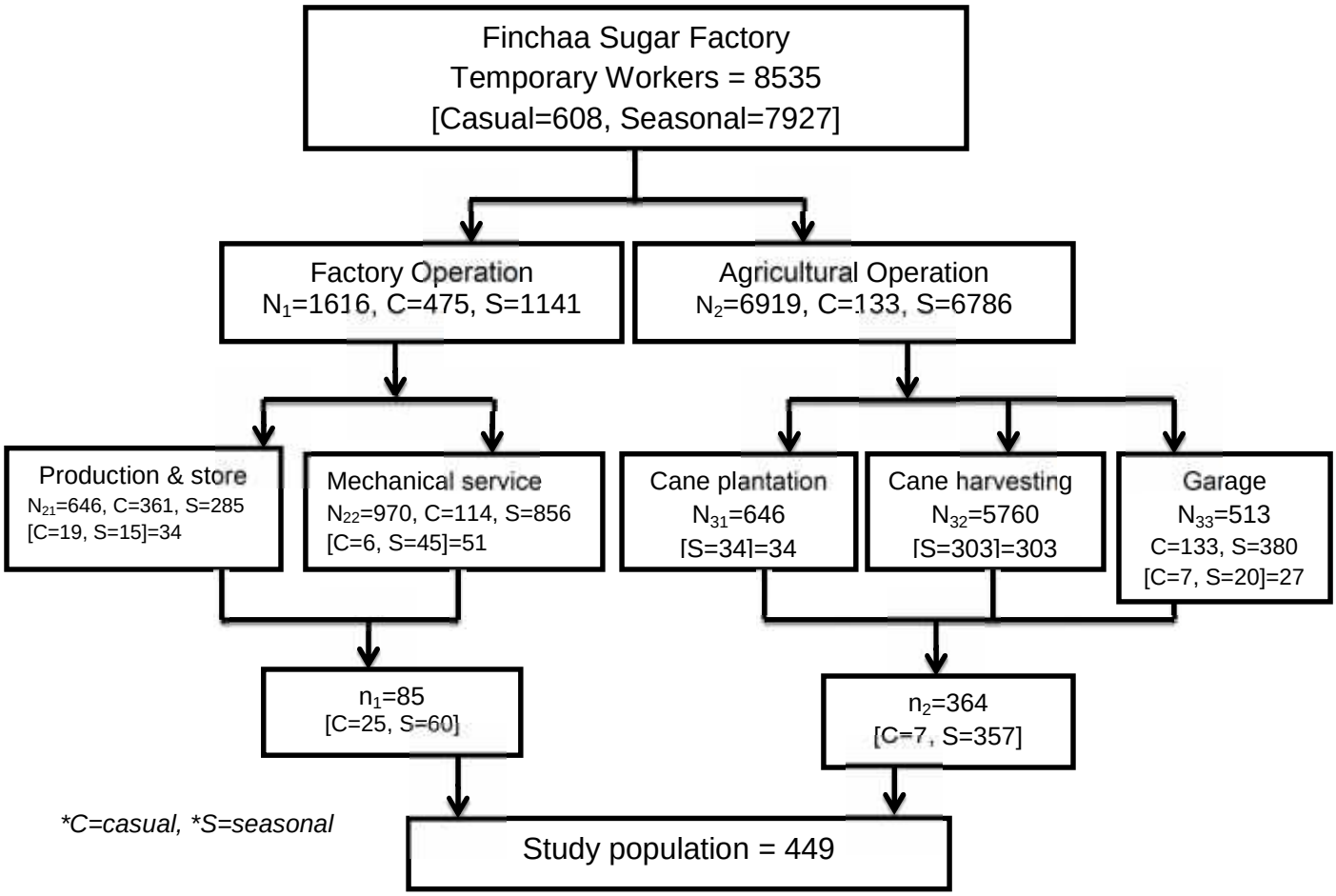

Figure 2: Schematic representation of the sampling procedure.

3.6. Variables of the study

Dependent variable: Work related injury

Independent variable:

Socio-demographic: Age, sex, marital status, education, service duration in the same institution, employment category, monthly salary

Behavioral: Sleep disorder, use of PPE, alcohol drink consumption, chat chewing

Work environment/conditions: Work operation, job category, workplace supervision, poor working relationship, job satisfaction

Organizational factors: Health and safety training, working hours per week, induction training

3.7. Operational definitions

I**njury**: Work-related injury that occurs on the job and as a direct result of the duties assigned to the specific job position, which is physical and non-fatal happened to workers at least once in the past twelve months.

I**njured worker**: - One, who has got bodily damage caused by duty assigned to him/his corresponding resulted in local or whole-body injury, which is physical and non-fatal, happened to a worker during his/her regular hours of work or away from or to the workplace at least once in the past 12 months prior to data collection.

Temporary worker: - An employee expected to remain in a position only for a certain period, and it includes seasonal and casual workers.

Seasonal worker: A form of temporary employment linked to specific periods (often longer than a casual worker link) of the year and influenced by seasonal factors.

Casual worker: An employee is employed when demanded by the employer with generally limited entitlements to benefits and little or no continuity of employment

Sleeping disorder: - The feeling of sleeping when a worker is at his/her workplace (37)

Poor work relationship: when jobs demand regular contact with other people at work followed by poor or unsupportive relationships with colleagues and/or supervisors and individuals feel isolated or unfairly treated.

Job satisfaction: the extent to which worker like (satisfaction) or dislike (dissatisfaction) his/her job.

Personal Protective Equipment: Utilization of the worker-specialized clothing or equipment worn by employees for protection against health and safety hazards at the time of interview as well regularly which is, eyes, head, face, hands, feet, and ears.

Work related injury: Injury that occurred on the job and as a direct result of the duties assigned to the specific job position and typically physical.

Self-report: Involves asking a participant to declare about his/her history of work related injury in the past 12 months prior to data collection.

Induct training: Training provided to the new employee/s by the employer in order to assist in adjustment to his/her/their new job tasks and to help them become familiar with the new work environment and people working around him/her/them.

Job satisfaction: Contentment/lack of it arising out of the interplay of employee's positive and negative feelings toward his/ her work.

Chat chewing: It is the practice of chewing chat leaves by the worker at least once per week for different purposes.

Smoking: It is the habit of smoking cigarette by worker regularly.

Alcohol drinking: It is the habit of drinking alcoholic beverages by the worker at least once per week.

3.8. Data collection procedures

To assess a self-report work related injury a pre-tested and structured face-to-face interview administered questionnaire was used. First prepared in English then translated into local languages: - Amharic and Afan Oromo for easy and consistent understanding of terms by a local authorized translator for the quantitative data based on the core module used after pre-testing in other than study area with similar settings and modified accordingly. Seven data collectors: five university graduated students and two BSc supervisors out of the unit were recruited for the study. Training was given for data collectors and supervisor for two days and on spot-checking of data procedure was made every day at the end of data collection. Discussion was made with the data collectors and problems encountered were discussed, and timely solutions were worked out from experiences. Every night supervisors and the principal investigator checked for completeness and a further edition reviewed each questionnaire. The necessary feedback was offered to data collectors in the next morning. The completeness of the questionnaire was checked for errors before data entry.

3.9. Data processing and analysis

After all, data were collected, it was checked for errors before analysis. Double data entry was used for consistency of data. Since there were quantitative data to measure the accuracy, completeness, and timeliness of data quality dimensions was considered. The data were coded, cleaned and entered into SPSS version 21 for analysis. Frequency check was done for controlling errors during data analysis. Its descriptive summary was analyzed and displayed in the form of graphs and tables. Data was analyzed using logistic regression models which yield crude and adjusted odds ratios at $p < 0.05$ significance level with 95% CI. Variables with $P<0.2$ were fitted into multivariate logistic regression analysis (38) to control confounded effects. Hosmer-Lemeshow goodness-of-fit was used for statistical analysis with backward LR for variable selection method into multiple logistic regression analysis.

4. Ethical consideration

Ethical clearance for the research was obtained from the research and publications committee of university of Gondar. A letter of permission and support from the Regional Labor and Social Affairs Agency and Zonal Labor Social Affairs office was also obtained.

The purpose of the study was clearly explained to concerned bodies. Each participant was informed about the purpose of the study, methods, and there was no risk to respondents than spenting their time and the benefit was information gained for future intervention. Workers were explained and reassured that anything asked was for research purpose only and none even their line managers as well as supervisors would have an access to their response.

In order to keep confidentiality of worker's information, five BSc university completed students and two BSc supervisors out of the unit were involved in the data collection process. In case questions were anomies, and only an identity number was used on each performa. The respondents were informed they have the right to be involved or not in the study, and withdrawn from the study would not affect their future working nature. Written consent form for illiterate respondents and verbal for those who can read and write were used during data collection.

5. Dissemination of the result

The findings will also be communicated to the UoG. The results of this research will be communicated through annual students and staff research conference at the University of Gondar.

Copies of this paper will be sent to Oromia Regional State Labor and Social Affairs Agency, Horo Guduru Wollega Zone Labor and Social Affairs office, Finchaa Sugar Factory (FSF). An attempt will be made to present the findings in different conferences and workshops and will be sent for publication on scientific journal.

6. Result

6.1. Socio-demographic information

A total of 449 temporary workers were interviewed on their bases of previous work related injury and were fully responded. Of these, 406(90.4%) were males and 43(9.6%) females. Mean age (SD) of the workers was 24.18±4.27. Their minimum age was 19 and maximum 45 years**.** Majority of respondents' age distribution was in the interval 19-24 280(62.4%) and 120(26.7%) were in between 25-29**.** About half of them 237(52.8%) were single and 217(47.2%) married in terms of marital status. Concerning their religion 82(18.3%) and 367(81.7%) were Orthodox and Protestant followers respectively. Thirty-three (7.3%) were illiterate, 167(37.2%), 137(30.5%), and 112(24.9%) were attended primary, secondary school and higher education respectively. Out of 449 respondents, 16 (3.6%), 256(57.0%) and 177(39.4%) were from Amhara, Oromo and SNNPR ethnic group. More than half of them, 313(69.7%), worked for five or less than and some 136(30.3%) for more than five years working in the same institution. The mean salary (SD) per month for the workers was 949.69±246.84; the minimum monthly salary was 400 and maximum 1900 ETB. Nearly all respondents 417(92.9%) and 32(7.1%) were employed as seasonal and casual workers as their working condition was determined by seasonal conditions in relation to institutional production, harvesting and plantation time (Table-1).

Table 1: Socio-demographic characteristic of self-reported work related injury among respondents, FSF, Oromia Region, May 2013 (N=449).

Variable	Frequency	Percentage
Age		
19-24	280	62.4
25-29	120	26.7
≥30	49	10.9
Sex		
Male	406	90.4
Female	43	9.6
Marital		
Single	237	52.8
Married	212	47.2
Religion		
Orthodox	82	18.3
Protestant	367	81.7
Educational status		
Illiterate	33	7.3
Primary school (1-8)	167	37.2
Secondary school (9-12)	137	30.5
Higher education	112	24.9
Ethnicity		
Amhara	16	3.6
Oromo	256	57.0
SNNPR*	177	39.4
Service duration		
≤5years	313	69.7
≥6years	136	30.3
Monthly salary in Birr		
400-800	148	33.0
801-901	143	31.8
901-1200	107	23.8
≥1201	91	11.4
Employment category		
Seasonal	417	92.9
Casual	32	7.1

*SNNPR – Southern Nations, Nationalities and People's Region

6.2. Work related injury characteristics

Out of 449 total respondents, only 183(40.8%) were reported that they were injured and the majority, 266(59.2%), were not injured at the workplace in the past 12months in the same institution. Among the injured workers nearly all of them were injured once 170(92.9%) and a few of them 13(7.1%) sustained repeatedly. 161(88.0%) were hospitalized due to the severity of work related injury while 22(12.0%) were not. About four (2.5%) for one day, 76(47.2%) for 2-4 days, 48(29.8%) for 5-10 days, and 33(20.5%) for more than ten days absented from their regular working hours. 181(98.9%) of work related injury had been reported while they were performing their regular work at workplace from the same work institution. One was going away from work to home (Table-2).

Table 2: A self-reported work related injury characteristics of FSF temporary workers, Oromia Region, May 2013.

Variables	Frequency	Percentage
Injured in the last 12 months (n=449**)**		
Yes	183	40.8
No	266	59.2
Frequency of injury (n=183**)**		
Once	170	92.9
More than once	13	7.1
Hospitalized because of injury (n=183)		
Yes	161	88.0
No	22	12.0
Number of days lost		
One day	4	2.5
2-4 days	76	47.2
5-10 days	48	29.8
>10 days	33	20.5
Injury intent		
Performing regular work	181	98.9
Travelling from work to home	1	0.55
Travelling from home to work	1	0.55

Out of 183 injured respondents 72(39.3%) cut, 27(14.8%) burn, 25(13.7%), 25(13.7%) eye injury, 5(2.7%) dislocation, 4(2.2%) fracture and 3(1.6%) other sustained type of body injury (Fig 2).

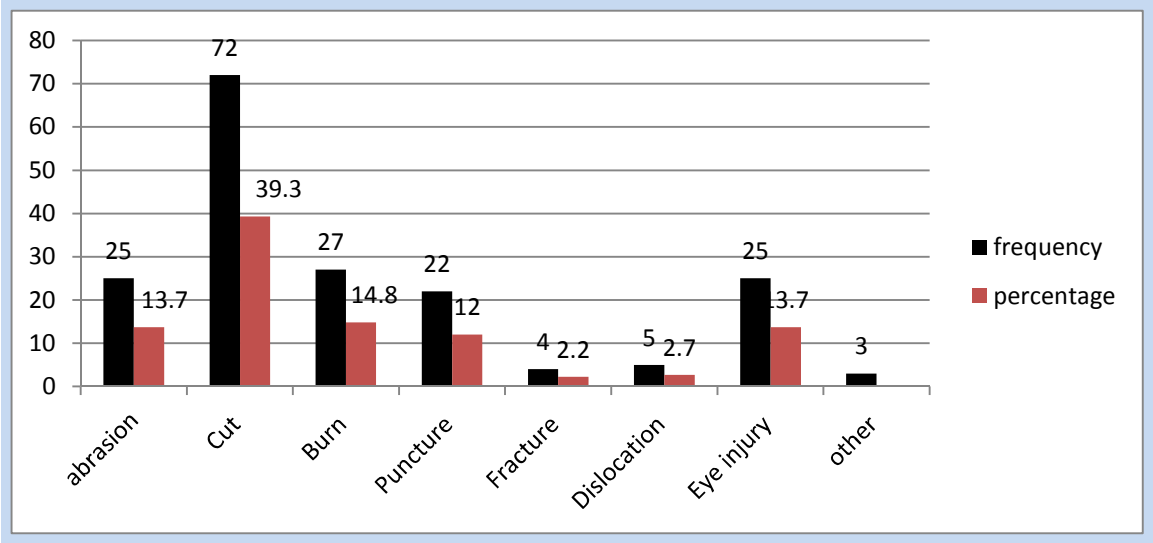

Figure 3: Type of a self-report work related injury pattern among FSF temporary workers, Oromia Region, May 2013 (n=183).

Based on respondents report of their previous work related injury, the main causes were hand tools 75(40.9%), splintering objects 25(13.7%), machinery 17(9.3%), fire 20(10.9%), falls 15(8.2%), collision with objects 12(6.6%), hit by falling objects 6(3.3%), acids and hot substances 6(3.3%) and others 5(2.7%)

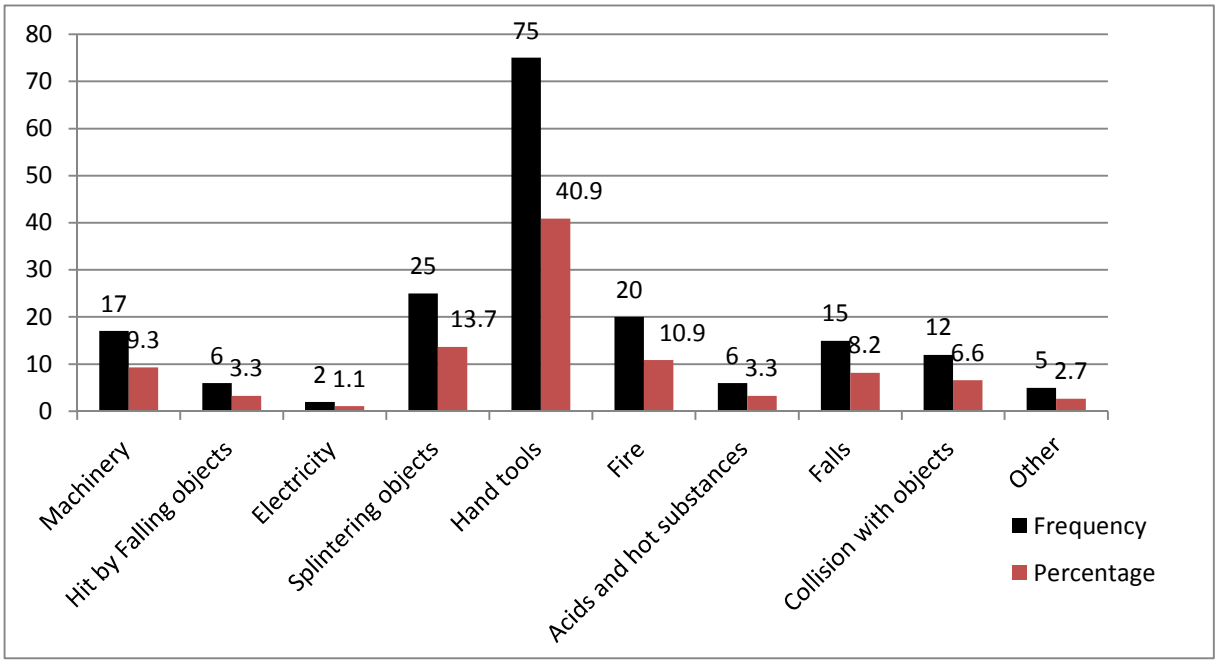

Figure 4: Cause of self-reported work related injury distribution among FSF temporary workers, Oromia Region, May 2013 (n=183).

6.3. Organizational factors

More than half of the respondents 247(55.0%) worked for more than the maximum legally allowed by law of the land, where some of them 202 (45.0%) worked for at or below 48 hours per week. All of the respondents 449(100%) had not been given any Occupational Health and Safety related trainings either by the institution or by other concerned body to keep them safeguarded and promoting healthy and safe working environment. However, 52(11.6%) were reported that induct training was given to them while the majority of them 397(88.4%) were not (Table-3).

Table 3: Work Organizational Factor Distribution of FSF Temporary Workers, Oromia Region, May 2013. (n=449)

Variable	Frequency	Percentage
Working hours per week		
≤48 hours	202	45.0
>48 hours	247	55.0
OHS training		
No	449	100.0
Induct training		
Yes	52	11.6
No	397	88.4

6.4. Behavioral factors

Thirteen of the total respondents (2.9%) had the habit of drinking alcohol while 436(97.1%) not. Of these, seven (53.8%) of them drink alcohol occasionally and two (15.4%) daily. None of the respondents had the habit of chewing chat. The majority of respondents had no the habit of smoking cigarette 445(99.1%) but few of them had 4(0.9%). 60(13.4%) had reported that they had experienced the feeling of sleeping in the workplace. Out of 449, the many of them 325(72.4%) did not utilize personal protective equipment. Some reason reported were: lack of safety trainings 214(65.9%), not comfortable 83(25.5%), lack of PPE (7.7%) and decrease in work performance 3(0.9%). However, 124(27.6%) properly utilized provided by the institution to safeguard themselves from work related injury at the workplace. The types of PPE utilized were gloves 24(19.4%), ear protector 3(2.4%), and overalls and safety shoes 97(78.2%) (Table 4).

6.5. Work environmental/condition factors

Study participants were selected from two operations, namely: agricultural and factory, but majority of them were from agricultural 364(81.1%) and the rest 85(18.9%) from factory operation based on their proportion number of workers employed. Based on this 51(11.4%) were mechanics, 34(7.6%) from production and storage, 27(6.0%) garage workers, 303(67.5%) cane harvesting, and 34(7.6%) were from cane plantation working sections. About 58(12.9%) were experienced of poor working relationship at work place mainly to their respective bosses 52(89.7%), at work place. None of the respondents had the habit of chewing chat. Workplace health and safety related supervision was not conducted by concerned body in the institution prior to data collection. Based on respondents' reflection concerning working conditions, only 129(28.7%) were responded satisfied and 320(71.3%) dissatisfied in their respective regular work (Table-4).

Table 4: Behavioral and Work Environmental Factor Distribution of FSF Temporary Workers, Oromia Region, May 2013**.**

Variable	Frequency	Percent
Alcohol drinking (n=449)		
Yes	13	2.9
No	436	97.1
Alcohol drinking frequency (n=13)		
Every day	2	15.4
1-3 days/week	4	30.8
Occasionally	7	53.8
Chat chewing		
No	449	100.0
Smoking		
Yes	4	0.9
No	445	99.1
Frequency of smoking (n=4)		
Every day	3	75
1-3 days/week	1	25
Sleep disorder (n=449)		
Yes	60	13.4
No	389	86.6
Use PPE (n=449)		
Yes	124	27.6
No	325	72.4
PPE used (n=109)		
Glove	24	19.4
Ear protector	3	2.4
Overall, shoe	97	78.2
Reason not used PPE (n=325)		
Lack of PPE	25	7.7
No safety training	214	65.9
Not comfortable	83	25.5
Decrease in work performance	3	0.9
Work operation (n=449)		
Factory	85	18.9
Agricultural	364	81.1
Job category (n=449)		
Mechanical	51	11.4
Production & storage	34	7.6
Garage	27	6.0
Cane harvesting	303	67.5
Cane plantation	34	7.6
Poor work relationship (n=449)		
Yes	58	12.9
No	393	87.5
Poor relationship		
Family	3	5.2
Colleagues	2	3.4
Boss	52	89.7
Other	1	1.7
Workplace supervision (n=449)		
No	449	100.0
Job satisfaction (n=449)		
Yes	129	28.7
No	320	71.3

6.6. Bivariate and multivariate logistic regression analysis

6.6.1. Bivariate logistic regression analysis

Socio-demographic (age, sex, marital status, education, monthly salary, service duration, employment category), organizational (induction training, working hours per week), work environmental (work operation, job category, poor working relationship, job satisfaction, working department) variables were analyzed using binary logistic regression for their association for work related injury occurrence. OHS training and workplace supervision were not analyzed due to their complete uniform report. Based on the binary logistic regression analysis on socio-demographic variables: marital status, education, and service duration have shown a significant statistical association, where age, sex, employment category and salary not.

Age distribution of respondents has not shown any statistically significant association in the bivariate analysis. Respondents, who were single, have a more likely chance of being injured [OR= 1.99, CI: 1.36-2.933] at work place as compared to those who were married. Odds in illiterate respondents were 2.75 (CI: 1.24-6.09) times higher than those odds among higher education attended sustain a work related injury. High school level attended [OR= 3.13, CI: 1.85-5.29] have a higher chance of work related injury as compared to those who were attended higher education. However, who were at their elementary school have shown no significant statistical association [OR=1.04, CI: 0.62-1.74] with injury occurrence. Pertaining to their work experience workers, who have served for about five years or less, were more likely injured in their work than those who were more than five years of experience [OR2.12 CI:1.37-3.27] (Table 5).

Organizational related variables working hours per week, induction training were analyzed for their positive association to work related injury occurrence. Respondents, who worked for more than 48 hours per week, were more likely exposed to work related injury [OR=1.53, CI: 1.04-2.24]. In addition, workers with no induct training were more vulnerable to workplace injury [OR=1.88, CI: 1.04-3.42] than their counterpart (Table 5).

Workers' behavioral aspects of work related injury was analyzed using binary logistic regression: personal protective equipment utilization, alcoholic drinking habit [OR=8.44, CI: 2.43-6.55], sleeping disorder had shown a statistically significant association with injury occurrence. Respondents who did not use personal protective equipment had four times chance of work related injury than who did. Again, those who have the feeling of sleeping at the workplace have a higher risk of work related injury based on the exposure response analysis [OR=7.53, CI: 3.87-14.65] relative others. Respondents' habits of smoking have not shown the risk of work related injury (Table-5).

Up on considering the general selected two working operations: factory workers were more likely prone to work related injury [OR= 1.74, CI: 1.08-2.79] as compared to agricultural operation workers. Workers who were employed in the garage working department have three times more risk of being injured at work place [OR= 3.12, CI: 1.09-8.92] than other considered departments. Having poor work relationship at workplace has contributed about 3.85 times (CI: 2.13-6.97) chance of being injured than who did not. Those who have responded dissatisfied with their job were 1.63 times more likely injured [OR= 1.63, CI: 1.06-2.51] compared to those who were satisfied with their job (Table-5).

6.6.2. Multivariate logistic regression analysis

Socio-demographic factors (age, sex, marital status, education service duration, monthly salary), organizational (induct or skill training, working hours), behavioral (utilization of personal protective equipment, drinking alcohol, sleeping disorder), and work environment (working departments, poor work relationship, and job satisfaction) were imported into multiple logistic regression for analysis based on their previous score of $P<0.2$. After analysis of measurement variables' contribution for the occurrence of work related injury, the majority of them have shown a statistically significant association.

Respondents' educational status has shown a strong association with a work related injury: illiterate [AOR= 5.32, CI: 1.82-15.55], primary school attended [AOR= 2.28, CI: 1.11-4.69], and secondary school attended [AOR= 7.05, CI: 3.43-14.47].

Respondents, who worked for five or less years in the same workplace, have two times [AOR=2.13, CI: 1.08-3.62] more likely to get work related injury as compared to more experienced ones.

Workers, who were, not given induction training, had a higher likelihood of work related injury as compared to their counterparts [AOR= 10.67, CI: 4.07-28.48]. Respondents who were not provided PPE at work were more likely sustained a work related injury [AOR= 8.78, CI: 4.34-17.77]. On the other hand, respondents who had experienced sleeping disorder at the workplace has eleven [AOR=11.88, CI: 4.95-28.48] times more likely exposed to work related injury.

Work environmental/condition variables considered have contributed to the work related injury occurrence with statistically significant association: having a poor working relationship at work place has shown about 4.7 [AOR= 4.70, CI: 1.97-10.13] times more likely get work related injury. Respondents dissatisfaction with their current job has moderately associated [AOR= 2.14, CI: 1.22-3.77] with the occurrence of work related injury. Out of five working sections considered, only being a garage worker has associated [AOR= 8.15, CI: 1.99-33.27] with a significant statistical figure but being cane harvester was become protective for work related injury.

Other variables: age, sex, marital status, monthly salary, and smoking habit of workers and working operations remained insignificant after controlling for confounding effect in multivariate analysis even though they may have contributed.

Table 5: Associated Socioeconomic, Behavioral, Organizational and Environmental Factors of Self-reported Work Related Injury, Oromia Regional State, FSF, May 2013

Variable	Injury		Crude OR(95%CI)^	Adjusted OR(95%CI)
	Yes [n]	No[n]		

Age				
19-24	134	146	1.73(0.92-3.25)	
25-29	32	88	0.68(0.34-1.39)	
≥30	17	32	1.00	
Sex				
Male	170	236	1.66(0.84-3.28)	
Female	13	30	1.00	
Marital				
Single	115	122	1.99(1.36-2.93)	
Married	68	144	1.00	
Education				
Illiterate	15	18	2.75(1.24-6.09)	5.32(1.82-15.55)**
Primary school	52	115	1.04(0.62-1.74)	2.28(1.11-4.69)*
Secondary school	79	58	3.13(1.85-5.29)	7.05(3.43-14.47)***
Higher education	34	78	1.00	1.00
Service duration				
≤5 years	144	169	2.12(1.37-3.27)	2.13(1.16-3.92)*
≥6years	39	97	1.00	1.00
Monthly salary				
400-800	70	78	1.65(0.85-3.18)	
801-900	63	80	1.44(0.744-2.80)	
901-1200	32	75	0.78(0.38-1.59)	
≥1201	18	33	1.00	
Working hours/week				
≤48 hours	71	131	1.00	1.00
>48 hours	112	135	1.53(1.04-2.24)	2.45(1.40-4.27)**
Induct training				
Yes	17	43	1.0	1.00
No	166	223	1.88(1.04-3.42)	10.67(4.07-28.48)***
Use PPE				
Yes	24	100	1.00	1.00
No	159	166	3.99(2.43-6.55)	8.78(4.34-17.77)***
Alcohol drinking				
Yes	11	2	8.44(1.85-38.55)	
No	172	264	1.00	
Sleep disorder				
Yes	48	12	7.53(3.87-14.65)	11.88(4.95-28.48)***
No	135	254	1.00	1.00
Work operation				
Factory	44	41	1.737(1.080-2.794)	
Agricultural	139	225	1.00	
Job category				
Mechanical	25	26	1.76(0.72-4.30)	3.28(0.97-11.06)
Production & storage	19	15	2.32(0.88-6.16)	0.96(0.26-3.53)
Garage	17	10	3.12(1.09-8.92)	8.15(1.99-33.27)**
Cane harvesting	110	193	1.05(0.49-2.19)	0.24(0.09-.0.68)**
Cane plantation	12	22	1.0	1.00
Poor work relation				
Yes	40	18	3.85(2.13-6.97)	4.70(1.97-10.13)***
No	143	248	1.00	1.00
Job satisfaction				
Yes	42	87	1.00	1.00
No	141	179	1.63(1.06-2.51)	2.14(1.22-3.77)**

1=reference group, ^=P-V<0.2, *Significant at P<0.05, ** significant at P<0.01, ***significant at P<0.001

7. Discussion

The overall annual prevalence of work related injury among temporary workers of the FSF was 40.8% (183). A study from Tendaho Agricultural development in Affar region showed that annual work related injury was higher than this study (9). Similarly a study in Nigeria also higher than this study (63%)(18).This may due to difference in study population used in this study and previous study. On the other hand, this study was conducted only on temporary workers of the two selected work operations. In addition, no workplace occupational health and safety inspection was conducted recently before or during this study was conducted to assess the status of workplace as well as minimum labor conditions. The sample size used in this study is so small that it may oscillate the injury prevalence, or associated factors relevance.

The severity of work related injury was made by their frequency of hospitalized rate and number of days lost for either medication time or recovery time from their injured body after medication. Here, out of all injured respondents, 88% of them visited a health institution, where 12% of them not. Of these, 20.5% were given for more than ten days, 29.8% were for five to ten days and the majority of them (47.2%) were given for two to four days of regular working days for either medication or recovery time. A few of them injured repeatedly while majority of them (92.9%) once within the study period. Almost all of the work related injury has taken place at a workplace during regular working hours. The result from this study is more severe than previous studies (9, 10, 20). This is due to different study population source used; and a few respondents trained on safety in previous studies.

Regarding to the educational status of respondents, illiterates 33(7.3%) were at very high risk of than respondents who have attended a higher educational level [AOR=5.32, CI: 1.82-15.55]. A study from Brazil suggested that low skill laborers were needed for such work study (23). The study confirms the illiterate workers' being incompetent enough to higher positions of work safer than their current work and allowed to work in the laborious work position. Despite their sample size, illiterate respondents' likelihood being injured at workplace is relatively high as

compared to other educational levels. Primary school attended 167(37.2%) respondents have 2.28 times the chance work related injury relative to those who have attended a higher or college level. Secondary school attended 137(30.5%) respondents placed first rank [OR=7.05, CI: 3.43-14.47] among educational levels as they work longer working hours per week 76(55.5%) for more than 48hours/week. A survey report from Nicaraguan sugar industry's labor conditions showed 149(22.9%) illiterate, 413(63.5%) primary, 23(3.6%) and 13.5% higher education attended workers employed (24). Suggestion from study in Brazil sugar cane based ethanol production revealed a need for low-skilled, low-wage and skill workers demand for this kind of work (23). A few studies conducted in Ethiopia had shown the level of education remained insignificantly associated for work related injury occurrence(9, 10). The total number of respondents who have attended primary school was very high compared to other levels, meanwhile has the least chance of being injured. As their number as their educational level increases, the chance of getting a work related injury is reversed. The proportion of illiteracy is in this study is lower than other studies.

Service duration of respondents has also positively associated for occurrence of work related injury. Newly employed workers, in case of this study, less or equal to five years, are more likely injured at the workplace [AOR= 2.13, CI: 1.16-3.92] relative to the more experienced ones. Opinions from the ILO's reports are also in line with this study finding (1, 4, 5). This could be due to workers' slow adaptation and acclimatization to the nature of working and environmental conditions of their current workplace set up. The institution's willingness not to provide socialization, safety and induction training to the newly employed workers would aggravate the risk injury at the workplace.

Working hours per week has positively contributed to work related injury [AOR=2.45, CI: 1.40-4.27]. This finding indicated that more than half of the respondents worked for more than normal hours of work a week (36). On the other hand, working for more than 48 hours/week from other study is higher than this study [AOR=8.74, CI: 5.57-13.71) (9). The difference is because of source population used in this study set up. Respondents who with no induct trainings were 10.67 [CI: 4.07-28.48] times

more likely to be injured at work place than who were given training. Some suggestions from different literatures on temporary workers viewed that they are employed mostly as casual and seasonal workers under poor health, safety and environmental conditions (21, 35). The issues of providing induct training for temporary workers in this study area were remained unimportant before the employer by considering their nature of work.

Provision and proper utilization of personal protective equipment has shown a great difference for the happening of workplace injury or not. Respondents who improperly utilized PPE were more likely injured than their counterparts [AOR= 8.78 CI: 4.34-17.77]. Reports from different literatures have shown similar direction (29, 33). Most of the safety services in Ethiopia in many undertakings are focused mostly on provision of PPE and other issues such as, organizing awareness creation training programs occasionally (30). However, still there are gaps in utilization of PPE. Some reasons why respondents did not use PPE in the workplace were lack of PPE 25(5.6%) it for casual workers, decrease work performance 3(0.7%), not comfortable 83(18.5%), no safety training 214(47.7%), was reported from this study unit frequently.

Workers, who have sustained feeling of sleeping in the workplace, had shown a strong association for workplace injury occurrence [AOR=11.88 CI: 4.95-28.48]. The results from other literatures are lower than this study (10, 27, 28). This is due to different study population source used; and a few respondents trained on safety in previous studies. It could be due to different study population source used; and a few respondents trained on safety in previous study. The result of this study has shown working environment/condition had contributed to the workplace injury occurrence. Respondents who employed in garage working department had shown only significant statistical association with work related injury [AOR= 8.15 CI: 1.99-33.27] where other considered departments were not. Study in Indian automobile repair, 63% of the workers reported injuries (31). Study from Eritrea showed that the garage workers used a variety of tools and equipment when performing their task with poor safety services (34). The result of this study also showed workers in

garage workers are to their hazardous nature of work environment followed by high rate of being injured.

On the other hand, respondents, who had poor work relationship at the workplace, also faced more frequently than their counterparts [AOR= 4.70, CI: 1.97-10.13]. Majority of them (89.65%) were reported that their main source of poor work relationship was between their nearest bosses in the workplace. A study from Pakistan Noon Sugar industry, out of respondents given supervisors' were willing to listen their work problems and 6.4% to 21.2% respondents were disagreed (32). The proportion of previous finding workplace injury is lower than this study. The difference could be due to study design and study population used in the previous study.

A negative feeling about their current job was also moderately contributed to the workplace injury occurrence [AOR=2.14, CI: 1.22-3.77]. Result from another study also moderately associated to work related injury but lower (9). The variation could be the low honest and sincere positioning of the safety program to enhance employee welfare makes practical sense in light of current knowledge about job satisfaction in current study.

8. Strength and limitation of the study

Strength of the study

- The study considered the vulnerable groups for work related injury as the majority labor work done by them; therefore, will help the organization as well as policy makers.

Limitation of the study

- The lack of adequate similar studies, particularly in Ethiopia made difficult in comparing results.
- The study design was cross sectional and it may be prone to bias.
- Severely ill workers and night shift were excluded from the study.
- Limited references to compare findings with them.
- Time of the study is a one-year data in that it may overestimates or underestimates the result.

9. Conclusion

The overall result of this study found the prevalence of work related injury among temporary workers of FSF employed in Agricultural and Factory work operations is relatively low when compared with other studies. The work related injury severity was measured by rate of hospitalization and workdays lost and it was relatively high, which is likely to impact productivity.

Finding from this study showed that there are factors slopes in the occurrence of work-related injuries among respondents.

- educational status of the respondents;
- less experienced;
- working for more than 48hours/week;
- lack of induction trainings;
- improper personal protective equipment utilization;
- having sleeping disorder;
- working department (garage workers);
- having poor work relationship at the workplace;
- job dissatisfaction

were significantly associated for the occurrence of work related injury.

10. Recommendation

Based on this study finding, it is better to recommend as follows and implemented by respective dealers:

To the organization/employer:

Shall take the necessary measure to safeguard adequately the health and safety of the workers: in particular:

- Take corrective measures to ensure that workers properly instructed and notified concerning the hazards of the workplace.
- Facilitating and encouraging workers toward their educational status improvement
- Providing workers with PPE in time and instruct them on its use.
- Reducing long working hours/week to legally allowed by law of the land
- Providing OHS, induction trainings for workers
- Providing workers sleep health education
- Creating supportive and cooperative working environment for workers

To workers:

- Make proper use of all safeguards, safety devices and other appliance supplied for protection of health of the workers.

To regional/zonal Labor and Social Affairs

- Cooperating with both workers and employers to improve workplace OHS policy, directives, rules, and regulations

To researchers

- Conducting further study in considering clinical as well insurance data, and comparing temporary and permanent workers in this institution in the wider scope to assess work related injury in this work set up.

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12. Annexes

Annex-1: Consent form

Dear participant!

Hello!

My name is…….. I am here on behalf of Fikru Keno, a student of public health at the University of Gondar. He is doing his thesis for the partial fulfillment of master's degree in Occupational Health and Safety Management on "Work Related Injury and Associated Factors among Temporary Workers of Finchaa Sugar Factory, Oromia Regional State, Western Ethiopia, 2013". He has received permission from Institute of Public Health at University of Gondar, a letter of

support from Oromia Regional State Labor and Social Affairs Agency and Horo Guduru Wollega zone Labor and Social Affairs Office. The objective of this study is to assess a self-report work related injury and associated factors among temporary workers in the Agricultural and Factory operations of Finchaa Sugar Factory, Abay Choman District, Oromia Regional State, 2013. The factory was selected for this study because it is one of the well-known sugar and ethanol production in Ethiopia and with the hope that you will cooperate with us.

The questionnaire does not concern on the private (personal) information, which will maintain confidentiality. You have full right to refuse part of or the whole of the questionnaires & no one in force you to do so. However, your honest participation and answers to the quaternaries will help us in better understanding of the problem and to give guidance on how to intervene within the study area.

So, would you willing to participate actively and honestly? Yes ☐ No ☐

Contact person in need investigator: Fikru Keno

Email: fikru2013@gmail.com

Tel: +251-910332551

THANK You!

Annex-2: Questionnaire – English version

UNIVERSITY OF GONDAR

GONDAR COLLEGE OF MEDICINE AND HEALTH SCIENCE

INSTITUTE OF PUBLIC HEALTH

DEPARTMENT OF ENVIRONMENTAL AND OCCUPATIONAL HEALTH & SAFETY

A Self-report Work related Injuries Assessment Questionnaire

Interviewer: Code----------Name----------signature----------

Date of interview----------Time started---------- Time completed-------

Result of interview:

1. Completed 3. Refused

2.Respondent not available, 4. Partially completed

Checked by:

Supervisor Name----------signature----------Date----------

NO.	Question	Possible Response	Code	Skip code
I.	**Socio-demographic information**			
Q101	Age of worker (in year)	_____		
Q102	Sex:	1. Male 2. Female		
Q103	Marital status:	1. Single 2. Married 3. Divorced 4. Widowed		
Q104	Religion:	1. Orthodox 2. Muslim 3. Protestant 4. Catholic 5. Other/specify		
Q105	Ethnicity:	1. Amhara 2. Oromo 3. Tigire 4. Others/specify		
Q106	Education	1. Illiterate 2. Primary school (1-8) 3. Secondary school (9-12) 4. Higher education		
Q107	Service duration in day or month or year in the same workplace	_____ _____		
Q108	Monthly salary in Birr	_____		
Q109	Employment category	1. Seasonal 2. Casual		
II.	**Work related injury characteristics**			
Q201	Have you had an incident at job that resulted in an injury to	1. Yes 2. No		

	you in the last 12 months?			
Q202	If yes to Q201, how many times?	_____		If no, go to Q301
Q203	Part of the body affected	1. Ear _____ 2. Knee _____ 3. Toe _____ 4. Finger _____ 5. Head _____ 6. Upper arm _____ 7. Lower arm _____ 8. Upper Leg 9. Lower Leg _____ 10. Back _____ 11. Chest _____ 12. Multi-location _____ 13. Other, specify_____		
Q204	Type of injury			
Q205	What were you doing at the time of injury	_____ _____ _____		
Q206	Causes of injury	1. Machinery 2. Hit by Falling objects 3. Electricity 4. Splintering objects 5. Hand tools 6. Fire 7. Acids and hot substances 8. Falls 9. Collision with objects 10. Lifting heavy objects 11. Other, specify_____		
Q207	Day of injury	1. Monday 2. Tuesday 3. Wednesday 4. Thursday 5. Friday 6. Saturday 7. Sunday		
Q208	Time of injury	1. In the morning 2. In the Afternoon 3. In the evening 4. In the midnight		
Q209	Were you hospitalized as result of injury in	1. Yes 2. No		

	the last 12 month			
Q210	Number of days lost due to injury at work last one year (in days)	_____		
III. Organizational factor questions				
Q301	Hours worked per week	_____		
Q302	Have you had any safety training in connection with new employment, new equipment or other Changes?	1. Yes 2. No		
Q303	Have you had any induct training in connection with new employment?	1. Yes 2. No		
Information on workers' behavior				
Q401	Do you have alcohol drinking experience?	1. Yes 2. No		
Q402	If your answer is yes to Q401, how often?	1. Every day 2. 1-3 days/week 3. Occasionally		If no, to Q403
Q403	Do you chew chat?	1. Yes 2. No		
Q404	If your answer is yes to Q403, how often?	1. Every day 2. 1-3 days/week 3. Occasionally		
Q406	Do you have experience of smoking?	1. Yes 2. No		If no, skip to Q407
Q407	Do you have sleeping disturbance at workplace?	1. Yes 2. No		
Q408	Do you use any personal protective equipment?	1. Yes 2. No		
Q409	If yes to Q407, what type?	1. Gloves 2. Ear plug 3. Respirators 4. Helmet 5. Overalls 6. Goggles 7. Face shield 8. Boots 9. Others, specify_____		If no, skip to Q410
Q410	What are your reasons for not using personal	1. Lack of protective equipment		

	protective equipment?	2. Lack of safety and health education 3. Not comfortable to use 4. Decrease work performance 5. Create safety and health hazards 6. Other, specify_____		
IV. Work environment/condition factors questions				
Q501	Work operation	1. Yes 2. No		
Q502	Job category			
Q503	Do you have poor work relationship at work?	1. Yes 2. No		
Q504	If yes to Q501, with whom do you have?	1. Family 2. Colleagues 3. Boss 4. Other_____		If no, skip to Q503
Q505	Workplace regularly supervised	1. Yes 2. No		
Q506	Are you satisfied with the job or task required to do?	1. Yes 2. No		

Annex 3: Amharic Version Questionnaire

ጎንደር ዩኒቨርሲቲ

ጎንደር ሕክምና ጤና ሳይንስ ኮሌጅ

የሕብረተሰብ ጤና አጠባበቅ ተቋም

የከባቢና የሙያ ጤንነትና ደህንነት ትምህርት ክፍል

ዉድ ተሳታፊዎች!

በመጀመሪያ እንኳን በደህና መጡ!

ስሜ..... ይባላል፡፡ እኔ አቶ ፍቅሩ ቀሮ፤ የጎንደር ዩኒቨርሲቲ በሕክምናና ጤና ሳይንስ ኮሌጅ በሕብረተሰብ ጤና አጠባበቅ ተቋም የሙያ ጤንነትና ደህንነት አስተዳደር ሁለተኛ ዓመት የድህረ ምረቃ ተማሪ ተወክያሁ፡፡ ምርምሩም “*የሥራ ላይ አደጋና መንስዔዎቹ በፊንጫዓ ስኳር ፋብሪካ ጊዜያዊ ሠራተኞች በኦሮሚያ ክልላዊ መንግስት በሆሮ ጉዱሩ ወለጋ በሚገኝ ላይ ጥናታዊ ጽሑፍ ለማካሄድ*” ነዉ፡፡ ምርምሩንም ለማካሄድ ከጎንደር ዩኒቨርሲቲ የምርምርና ስነ-ምግባር ኮሚቴ ፍቃድ፤ እንድሁም ከኦሮሚያ ሠራተኛና ማህበራዊ ጉዳይ ኤጀንሲ፣ ከሆሮ ጉዱሩ ወለጋ *ሠራተኛና ማህበራዊ ጉዳይ* የድጋፍ ደብዳቤና ከፊንጫኣ ስኳር ፋብሪካ ለምርምሩ ፍቃድና ድጋፍ አግኝቷል፡፡ ይህ ድርጅትም ለዚህ ምርምር ሊመረጥ የቻለዉ ከላዉ የሰዉ ኃይልና በሚያመርተዉ ዉጠቶችን መሠረት በማድረግ ነዉ፡፡ ምክኒያቱም በአገራችን አንጋፋና ዋነኛ የስኳርና ኢታኖል አምራቾች ድርጅት አንዱ ነዉ፡፡ ይህ መጠየቂያ ወረቀት የያዛቸዉ ጥያቄዎች ስለ ግል ጉዳይ አይመለከቱትም፡፡ በጥናቱ ዉስጥ ለመሳተፍ ወይም አለመሰተፍ፣ ጥያቄዎቹን ሙሉ በሙሉ ወይም በከፊል ለመመለስ፣ ላለመሳተፍም መብትዎ ሙሉ በሙሉ የተጠበቀ ነዉ፡፡ ግን የእርስዎ ቅንነት ተሳትፎ ለምርምሩ ግብዓትና ዓላማዉን ለማሳካት የነላ ጠቀሜታ አለዉ፡፡

ስለዚህ በምርምሩ ዉስጥ ለማሳተፍ ፈቃደኛነዎት? ነ. አዎ 2. አይደለሁም

እናመሰግናለን!

የሥራ ላይ አደጋ የሚሰበስብበት መጠየቂያ

የጠያቂዉ: ኮድ----------ስም----------ፊርማ----------

የተጠየቀበት ቀን----------የተጀመረበት ሰዓት---------- የተጠናቀቀበት ሰዓት----------

የመጠየቂያዉ ዉጠት:

1. ተጠናቋል 3. ፍቃደኛ አልሆነም/ችም

2. ተጠያቂዉ አልተገኘም 4. የተወሰነዉን መልሷል

ያረጋገጠዉ: ተቆጣጣሪ ስም----------ፊርማ----------ቀን----------

ተ.ቁ	ጥያቄ	አማራጭ መልስ	ኮድ	የመሸጋገሪያ ኮድ
	ክፍል አንድ፡ ማህበራዊ ስነ ሕዝባዊ ገጽታዎች			
Q101	ዕድሜ	_____		
Q102	ጸታ:	1. ወንድ 2. ሴት		
Q103	የጋብቻ ሁኔታ:	1. ያላገባ 2. ያገባ 3. የፈታ 4. የሞተበት		
Q104	ኃይማኖት:	1. ኦርቶዶክስ 2. ሙስልም 3. ፕሮተስታንት 4. ካቶሊክ 5. ሌላ----------		
Q105	ብሔር:	1. አማራ 2. ኦሮሞ 3. ትግሬ 4. ሌላ-------ይግለጹ		
Q106	የትምህርት ደረጃ	1. ያልተማሩ 2. አንደኛ ደረጃ (1-8) 3. ሁለተኛ ደረጃ (9-12) 4. ከፈተኛ ትምህርት ተቋም		
Q107	በድርጅቱ ዉስጥ ያገለግሉት ጊዜ (በዓመት/ወር/**ቀን**)	_____		
Q108	ወራዊ ደመዎዝ (በብር)	_____		
Q109	የቅጥር መደብ	1. ሲዝናል 2. ካዥዋል		
	ክፍል ሁለት፡ የሥራ ቦታ ጉዳትን በተመለከተ			
Q201	ባለፉት 12 ወራት **ዉስጥ ከሥራ ጋር በተያያዘ የደረሰብዎት ጉዳት አለ?**	1. አዎ 2. አላጋጠመኝም		
Q202	ለጥያቄ Q201, መልስዎ አዎ ከሆነ ለስንት ጊዜ ነዉ	_____		ካላጋጠመዎት ወደ Q301 ይሻገሩ
Q203	የተጎዳ የሰዉነት ክፍል	1. ጆሮ _____ 2. ጉልበት _____ 3. ቁርጭምጭምት _____ 4. ጣት _____ 5. ራስ _____ 6. ክንድ _____ 7. እጅ _____ 8. **ጭን** 9. እግር _____ 10. **ጀርባ** _____ 11. **ደረት** _____ 12. **በተለያዩ የሰዉነት ክፍል** ------ 13. **ሌላ፤ ይግለጹ**		

Q204	የጉዳቱ አይነት			
Q205	አደጋ ሲደርስብዎት ምን ሲሰሩ ነበር?	_____ _____ _____ ___		
Q206	የአደጋ ምክንያት	1. ማሽን 2. ብሚወድቁ ዕቃዎች በመመታት 3. ኤሌክትሪክ 4. በተፈናጣሪ ነገሮች 5. የእጅ መሳሪያዎች 6. እሳት 7. አሲድና 8. Collision with objects 9. ከባድ ዕቃዎችን በማንሳት 10. ሌላ, ይግለጹ_____		
Q207	ጉዳቱ የደረሰበት ቀን	1. ስኞ 2. ማክሰኞ 3. ዕሮብ 4. ዓሙስ 5. ዓርብ 6. ቅዳሜ 7. እሁድ		
Q208	ጉዳቱ የደረሰበት ሰዓት	1. ጠዋት 2. ከሰዓት 3. ማታ 4. ስሊት		
Q209	በደረሰብዎት ጉዳት ምክኒያት በጤና ተቋም ተገኝተዉ ታክመዋል?	1. አዎ 2. አይደለም		
Q210	በደረሰብዎት ጉዳት ምክንያት ለምን ያክል ቀን ከሠራዎ ቀርቱዋል?	_____		
	ክፍል ሶስት፡ አስተዳደራዊን በተመለከተ			
Q301	በሳምንት ምን ያክል ሠዓት ይሠራሉ?	_____		
Q302	በሥራ ቦታ የሙያ ጤንነትና ደህንነትን በተመለከተ አዲስ ሆነዉ ሲቀጠሩ ወይም አዳዲስ አሠራሮች ወይም በሌሎች ስዉጦች ምክንያት ስልጠና ወስደዉ ያዉቃሉ?	1. አዎ 2. አይደለም		
Q303	እንደ አዲስ ሲቀጠሩ የሥራ ሁኔታን ወይም አከባበዉ ጋር ለማስተዋወቅ ስልጠና አገኝቷል?	1. አዎ 2. አይደለም		
ክፍል አራት፡ የሠራተኛዉን ባህሪን በተመለከተ				
Q401	አልኮል መጠጥ ጠጥተዉ ያዉቃሉ?	1. አዎ 2. አይደለም		

Q402	ስQ401 አዎ ከሆነ ስንት ጊዜ	1. በየቀኑ 2. ከ1-3 ቀን በሳምንት 3. አልፎ አልፎ		የማይጠጡ ከሆነ ወደ Q403 ይሀዱ
Q403	ጫት ቅመዉ ያዉቃሉ	አዎ 2. አይደለም		
Q404	የሚቅሙ ከሆነ ስንት ጊዜ	1. በየቀኑ 2. ከ1-3 ቀን በሳምንት 3. አልፎ አልፎ		የማይቅሙ ከሆነ ወደ Q405 ይሀዱ
Q405	ስጋራ ጭሰዉ ያዉቃሉ	1. አዎ 2. አይደለም		
Q406	ስQ404 አዎ ከሆነ ስንት ጊዜ	4. በየቀኑ 5. ከ1-3 ቀን በሳምንት 6. አልፎ አልፎ		የማያጭሱ ከሆነ ወደ Q407 ይሀዱ
Q407	በሥራ ቦታ እንቅልፍ ይሰመዎታል	1. አዎ 2. አይደለም		
Q408	በሥራ ቦታ የአደጋ መከላከያ አልባሳት ይጠቀማሉ	1. አዎ 2. አይደለም		
Q409	መልስዎ ለQ407 አዎ ከሆነ ምን ዓይነት?	1. ¹ንት 2. የጆሮ መከላከያ 3. የአፍንጫና አፍ መከላከያ 4. የጭንቅላት 5. ቱታ 6. የብየዳ መነጸር 7. የፊት 8. ጫማ 9. ሌላ, ይግለጹ_____		የማይጠቀሙ ከሆነ ወደ Q410 ይሀዱ
Q410	የማይጠቀሙ ከሆነ ምክንያትዎ ምንድን ነዉ	1. የመከላከያ መሳሪያ ባለመኖሩ 2. የሙያ ጤንነትና ደህንነት ስልጠና ስለማይሰጥ 3. ለመጠቀም ምቹ ስላልሆነ 4. የሥራ አፈጻጸምን ስለሚቀንስ 5. የጤና ጠንቅ ስለሚያስከትል 6. ሌላ, ይግለጹ_____		
ክፍል ፡ ሥራ ቦታ/ሁኔታን በታን በተመለከተ				
Q501	የሥራ ኦፕሬሽን	1. ፋብሪካ 2. እርሻ		
Q502	የሥራ መደብ	_____		
Q503	በሥራ ቦታ ምቹ ያልሆኑ የሥራ ግንኙነት አጋጥሞታል?	1. አዎ 2. አይደለም		
Q504	ስ Q501፣ መልስዎ አዎ ከሆነ ከምን ጋር የተያያዘ ነዉ?	1. ቤተሰብ 2. የሥራ ባልደረባ 3. ቅርብ አለቃ 4. ሌላ_____		አዎ ከሆነ ወደ Q503 ይሀዱ
Q505	በሥራ ቦታ የሙያ ጤንነተና ደህንነት ቁጥጥር ተደርጎ ያዉቃል?	1. አዎ 2. አይደለም		
Q506	ብሚሠሩት ሥራ ደስተኛ ነዎት?	1. አዎ 2. አይደለም		

ስለ ትብብሪዎ እናመሰግናለን!

Annex 4: Oromifa Version Questionnaire

YUNIVARSIITII GONDAR

KOLLEEJJII FAYYAA FI SAAYNSII GONDAR

DHAABBATA EEGUMSA FAYYAA UUMMATAA

MUUMMEE EEGUMSA FAYYAA NAANOO FI FAYYUMMAA FI NAGUMMAA OGUMMAA

Gaaffii Odeeffannoon Ragaa Miidhaan Balaa Haala Hojii Waliin Walqabate Itti Funaanamu.

Unka waliigatee hirmannaa

Kaabajamtoota hunduma dura hirmaattotaa!

Ani ……..'n jedhama. Fiqiruu Qannoo barataa Yunivarsiitii Gondar Kolleejjii Saayinsii Fayyaa fi Waldhaansaa, xumura digirii lammaffaa bulchiinsa fayyummaa fi nagummaa ogummaatiin ta'e, qu'annoon isaa "miidhaa balaa hojii waliin wal qabatee fi sababiiwwan isaa hojjeettoota yeroo Warhaa Sukkaara Finca'aa, Mootummaa Naannoo Oromiyaa, Dhiha Itoophiyaa, 2013" jedhu bakka bu'een jira. Xalayaa eyyema qo'oannoo kana gaggeessuuf Yunivarsiitii Gondar irraa akkasumas xalayaa deeggarsaa Ejensii Dhimma Hojjetaa fi Hawaasummaa Oromiyaa fi Godina Horro Guduruu Wallaggaa irra kan kennameef ta'uu isaa mirkanaa'ee warshaan Sukkaara Finca'aas hojii isaa akka galmaan ga'atuuf eyyema kennerraaf. Warshaan kun qo'annoo kanaaf kan filatameef akka biyyattiitti warshaa guddaa omishaa fi human namaa kan qabate waan ta'eef. Waraqaan af-gaaffii kun odeeffannoo dhimma dhuunfaa waliin kan walqabate miti. Hirmaannaa keessan keessatti mirgi kessan gutummaatti kan kabajame dha. Guutummaatti yokaan gariin hirmaachuu ni dandeessu; kan isin dirqisiis hinjiru. Garuu hirmaannaan keessanii fi deebiin keessan rakkina jiru hubachuu fi qajeelfamaa fi gorsa bakka qu'annoon kun itti gaggeeffametti akkamitti akka ittifamu kennuuf haala mijeessa.

Kanaaf, qo'annoo kana keessatti hirmaachuuf eyyamamoo dhaa?

Eyyee ☐ Lakki ☐

Nama qunnamtan, qo'ataa: Fiqiruu Qannoo

E-mail: fikru2013@gmail.com

Bilbila: +251-910332551

Galatoomaa!

Gaafataa: koodii----------Maqaa----------mallattoo----------

Guyyaa itti gaafatame---------- yeroo jalqabe----------yeroo itti xumure-------

Argama af-gaaffii:

1. Xumurameera
2. Deebisaan hin turre,
3. Hayyamamaa miti
4. Gariin deebiseera

To,ataa mirkaneesse:

Maqaa----------mallattoo----------guyyaa----------

Lak.	Gaaffii	Deebii/filannoo	Koodii	Ce'umsa
V. Odeeffannoo dhuunfaa hojjetaa				
Q101	Umriin kee meeqa	_____		
Q102	Saala	1. Dhiira 2. Dubartii		
Q103	Haala gaa'elaa	1. Kan hin fuune/heerumne 2. Kan fuudhe/heerumte 3. Kan hike/hiikte 4. Kan duraa dué/duute		
Q104	Amantaa	1. Ortoodoksii 2. Musliima 3. Pirotestaantii 4 Kaatolikii 5 Kan biro/ibsi		
Q105	Gosa	1. Amaaraa 2. Oromoo 3. Tigiree 4. Kan biroo/ibsi		
Q106	Haala barumsaa	1. Hin baranne 2. Sadarkaa 1ffaa (1-8) 3. Sadarkaa 2ffaa (9-12) 4. Sadarkaa olaanaa		
Q107	Bara tajaajilaa(guyyaan, ji'aan, waggaan)	_____		

Q108	Mindaa ji'aa Qarshiin	_____		
Q109	Haala qacarrii	_____		
VI. Haala balaa bakka hojiitti dhaqqabuu ilaalchisee				
Q201	Balaan bakka hojiitti jióota 12'n darban keessatti si dhaqqabeeraa?	1. Eyyee 2. Lakki		
Q202	Deebiin kee gaaffii Q201'f eyyee yoo taé siá meeqa?	_____ _____		Lakki yoo jette gaaffii Q301tti ce'i

Q203	Kutaa qaamaa miidhame	1. gurra _____ 2. jilba _____ 3. quba miillaa ___ 4. quba harkaa _____ 5. mataa _____ 6. irree olii _____ 7. irree gadii _____ 8. luka olii 9. luka gadii _____ 10. dugda _____ 11. laphee _____ 12. kutaa hedduu ____ 13. Ija 14. Kan biroo/ibsi_____		
Q204	Gosa miidhaa	_____		
Q205	Yeroo balaan si dhaqqabe maal hojjetaa turte?	_____ _____		
Q206	Sababa balaa	1. Maashinii 2. Waan olii kufuun 3. Elektrika 4. Waan darbatamuun 5. Meeshaa harkaan 6. Ibiddaan 7. Asiidii fi waan hoáan 8. kufuu 9. walitti bu'uu 10. waan ulfaataa kaasuu 11. kan biro/ibsi_____		
Q207	Guyyaa balaan dhaqqabe	1. Wiixata 2. Kibxata 3. Roobii		

		4. Kamisa 5. Jimaata 6. Sanbata 7. Dilbata		
Q208	Yeroo balaan itti dhaqqabe	1. Waaree dura 2. Waaree booda 3. Galgala 4. Halkan walakkaa		
Q209	Balaa jióota 12'n darban keessa si dhaqqabeen mana yaalaa deemteettaa?	1. Eyyee 2. Lakki		
Q210	Baayína guyyaa hojii qisaasamee (guyyaan)	_____		
VII.	**Odeeffannoo haala jaarmiyichaa**			
Q301	Torbanitti sa'atii meeqa hojjjetta?	_____		
Q302	Leenjiin fayyummaa fi nagummaa ogummaa (FNO) qacarrii ykn meeshaa haaraa faana walbsiisee siif kennamee beekaa?	1. Eyyee 2. Lakki		
Q303	Leenjiin jalqabaa haalli qacarrii fi naannoo hojii faana walsimsiisuuf siif kennameeraa?	1. Eyyee 2. Lakki		
Odeeffannoo amala hojjetaa ilaalchisee				
Q401	Araada alkoolii dhuguu qabdaa?	2. Eyyee 2. Lakki		
Q402	Deebiin kee Q401'f eyyee yoo ta'e si'a meeqaaf?	1. Yeroo mara 2. Toorbanitti guyaa 1-3 3. Darbee darbee		
Q403	Caatii ni qaamtuu?	1. Eyyee 2. Lakki		
Q404	Araada tamboo aarsuu ni qabduu?	1. Eyyee 2. Lakki		
Q406	Deebiin kee Q403'f eyyee yoo ta'e si meeqaaf?	1. Yeroo mara 2. Toorbanitti guyaa 1-3 3. Darbee darbee		
Q407	Rakkoon irribaa ni qabdaa?	1. Eyyee 2. Lakki		
Q408	Meeshaalee ittisa balaa bakka hojiitti ni	1. Eyyee 2. Lakki		

	fayyadamtaa/			
Q409	Deebiin kee Q407'f eyyee yoo ta'e kam fayyadamta?	1. Harkaaf 2. Gurraaf 3. Qaama hargansuuf 4. Mataaf 5. Guutuma qaamaaf 6. Waldeessuuf 7. Fuulaaf 8. Miillaaf 9. Kan biro/ibsi_____		
Q410	Meeshaalee ittisa balaa kan hin fayyadamne yoo ta'e maaliif?	1. Waan hin qabneef 2. Leenjii FNO fi fayyaa waan hin arganneef 3. Waan hin mijanneef 4. Saffisa hojii hir'isa 5. Balaa waan uumuuf 6. Kan biroo/ibsi_____		
VIII. Odeeffannoo haala/naannoo hojii ilaalchisee				
Q501	Damee hojii dhaabatichaa keessa hojjettu?	1. Warshaa 2. Qonnaa		
Q502	Ga'een hojiikeetii maal?			
Q503	Bakka hojiitti haala walitti dhufeenya honjii nama hin simanne si mudateeraa?	1. Eyyee 2. Lakki		
Q504	Deebiin kee Q501 eyyee yoo ta,e maal faana walqabateeti.	1. Maatii 2. Hojjettoota 3. Itti gaafatamaa 4. Kan biroo/ib_____		
Q505	Bakki hojii yeroo yerootti to'atamaa?	1. Eyyee 2. Lakki		
Q506	Hojii hojjettutti itti quufteettaa?	1. Yes 2. Lakki		

Hirmaannaa keessaniif galatoomaa!

Annex-5: Information Sheet to Get Permission for the Research

Introduction

This information sheet is prepared to explain the research project that you are asked to join with a group of research investigators. The main aim of this research project is to assess a self-report work related injury and associated factors among of Finchaa Sugar Factory temporary workers: agricultural and factory operations. The research team includes a final year MPH graduate student and two senior advisors from the University of Gondar, School of Public Health, College of Medicine and Health Sciences.

Name of Principal Investigator: Fikru Keno (BSc).

Name of Advisors: 1. Mr. Yifokire Tefera (BSc, MSc)

2. Mr. Manay Kifle (BSc,MPH)

Name of the Sponsor**: University of Gondar**

Name of Organization: **University of Gondar, Gondar College of Medicine and Health Sciences, Institute of Public Health:**

This information sheet is prepared by above mentioned researcher whose main aim is “Work Related Injuries and Associated Factors among Temporary Workers of Finchaa Sugar Factory, Abay Choman District, Oromia Regional State, 2013” The investigator is a final year MPH student with advisors from School of Public Health, College of Medicine and Health Sciences, University of Gondar.

Purpose:

The purpose of this research study is “To assess a self-report work related injury and associated factors among temporary workers of Finchaa Sugar Factory, Abay Choman District, Oromia Regional State, Western Ethiopia 2013“

This study is primarily designed to assess the severity of work related injury and potential factors to it. Result from the study will be used to assist in making recommendations for the institution as well production of valuable information to

make evidence based decision and proper plan for work related injury prevention and control.

Procedure:

The study uses Institutional based cross-sectional study design, through structured interview based self-administered questionnaire. The University of Gondar, Oromia National Regional State Labor and Social Affairs Agency, Horo Guduru Wollega zonal Labor and Social Affairs Office, will process permission.

Risk and/or Discomfort:

There is no any risk or discomfort respondents will face by participating in this research except dedication of their time for responding the interview. Any personal information registered in registration books will not be copied and transferred to other bodies. Every piece of information will be kept confidentially.

There will be no risk in participating in this research project.

Benefits:

There will be a direct benefit of the institution and workers participating in this research. The findings of the study will be very important to determine the extent of work related injury and factors associated with it for the production of valuable information to make evidence based decision and proper plan for work related injury prevention and control.

Incentives/Payment for Participating:

There is no incentive or payment to be gained by taking part in this project.

Confidentiality:

All Personal identifiers & personal information will not be taken. The information collected from this research project will be kept confidential. Information will be accessed by the researcher and research assistant only.

Persons to contact:

This research project will be reviewed and approved by the ethical committee of the University of Gondar. For further information, you can contact the following individuals (the researcher and advisors).

Investigator: Fikru Keno:

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Mobile no: +251-910332551

P.O. Box:

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2. Mr. Manay Kifle:

E-mail: manay2000@gmail.com

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Annex 6: Declaration

I, the undersigned, senior MPH student declare that this thesis is my original work in partial fulfillment of the requirement for the degree of Master of Public Health.

Name: Fikru Keno _____

Signature: _____

Place of submission: Institute of Public Health, College of Medicine and Health Sciences, University of Gondar.

Date of Submission: _____

This thesis work has been submitted for examination with my/our approval as university advisor(s).

Advisors

Name	Signature
Mr. Yifokire Tefera (MSc) _____	_____
Mr. Manay Kifle (MPH) _____	_____